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Mr. R. G. Follis
Standard Oil Company of California
225 Bush Street
San Francisco 20, California

Dear Mr. Follis:

Thank you very much for your letter of 14
January and the enclosed article "Oil and America".

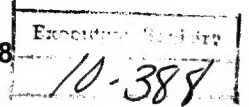
Your courtesy in sending me this article is
indeed appreciated and I am bringing it to the
attention of my associates here who have an in-
terest in such matters.

Once again, many thanks and kindest regards.

Sincerely,

Allen W. Dulles
Director

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STANDARD OIL COMPANY OF CALIFORNIA

225 BUSH STREET • SAN FRANCISCO 20 • CALIFORNIA

R. G. FOLLIS
CHAIRMAN OF THE BOARD

January 14, 1958

The Honorable Allen W. Dulles
Director, Central Intelligence Agency
Washington, D. C.

My dear Mr. Dulles:

Knowing your vital interest in the maintenance of adequate petroleum supplies for our national economy and defense, I feel certain you will be quite interested in the attached article discussing the outlook for our country's oil supplies in the coming decade.

Titled "Oil and America," it is preprinted from the January, 1958, issue of our publication, the Standard Oil Bulletin.

This study reviews the development of our petroleum resources down to the present and summarizes prospects for the immediate future as they have been foreseen by leading economists. In the light of present and potential defense requirements, and with particular reference to the current imports question, I hope this article will prove to be a useful source of information for you in making decisions regarding the Nation's oil policy.

Very respectfully yours,

Attachment

OIL and AMERICA

The years ahead

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

*Printed in advance
from the forthcoming
January 1958
Standard Oil Bulletin*

After ten years of dynamic postwar growth, it seems appropriate and interesting to pause and evaluate the future of our industry in the light of present knowledge of atomic power, solar energy, increased use of natural gas, and other factors.

This evaluation evokes some questions. Will demand for petroleum continue its steady climb? If it does, will our remaining reserves—locked up in the earth millions of years ago—provide an adequate base from which the oil industry (particularly in the United States) can discover and develop the huge and increasing quantities of oil for the years to come?

In answer to these questions which are so vital to all of us as citizens of the world, and particularly as stockholders of one of the world's leading oil companies, we have prepared the following article. It is based on a study by the Chase Manhattan Bank of New York, a study with which most economists and geologists are in substantial agreement.

R. G. FOLLIS

Chairman of the Board

STANDARD OIL COMPANY OF CALIFORNIA

The cost of producing a barrel of crude oil in the United States has risen 100% in ten years. But the nation will require, in the next decade, almost as much oil as has ever been produced in our history until now . . .

"Thus," said the Professor of Economics, "illustrates how you can arrive at an absurd and untenable conclusion, even using accepted methods and known facts." His lecture was way back in 1937—twenty years ago—when the United States was using three million barrels of petroleum a day. His illustration was a chart on which was projected the growth line of petroleum consumption in America twenty years into the future, to the year 1957.

"If we believe these calculations," the professor continued, "we must conclude that the United States in 1957 will be consuming between eight and nine million barrels of oil every day. Gentlemen, there isn't that much oil. Present estimates of all the oil that will ever be discovered in this country are around 100 billion barrels. This isn't oil we have on tap, you understand: much of it will not be found for fifty to seventy years."

"But let's go along with this chart for a few minutes. Consider what it would cost, gentlemen, if we set out to produce the eight to nine million barrels of oil the chart shows we will need. I don't have the figures, but it would be in the billions, literally billions of dollars. And there just isn't that much money available. So, you see, gentlemen, this chart is misleading. A more plausible estimate would be here, showing a rise of perhaps a million barrels a day, if that much."

The professor should have believed his chart, although most other experts in 1937 would have disagreed with it, just as he did. When 1957 came, our consumption was around nine million barrels of oil a day, as predicted. The billions of dollars estimated cost also was a true one, but the professor's assumption that it would not be available was false. It was raised (56 billion dollars in the years just since World

War II) and spent, principally from the sale of products by the oil industry.

As for running out of oil, we have, since the professor's lecture, found nearly all of his "ultimate" 100 billion barrels. We know, furthermore, that there is in the United States two to three times more oil to be recovered than was thought possible even so recently as ten years ago. Almost no one twenty years ago, including our professor, fully appreciated the inner dynamics of our petroleum industry—the manifold new uses that were to come, the increase in the use of oil power generally, the new ways to get it out and refine it, of the powerfully dramatic role it was to play in our entire economy.

Oil men are still curious about the future and what it may hold, but now they regard the facts—old and new—and the trends used by the experts of twenty years ago in a new light, one of faith. This does not mean we can predict, precisely or positively, what the demand for petroleum will be ten or twenty years from now—and if we can produce or find enough oil to meet that demand.

In the strictest sense, we cannot know. There is always the possibility of some now undreamed-of discovery that will replace oil as a source of energy. But until it appears we must go on the assumption that our present technology (with full allowance for known sources of future power such as atomic energy, solar energy, etc.) will continue to be what it is today—an oil technology.

In the professor's day, around 1937, oil supplied a third of our energy. In the years since, it has ballooned enormously, along with our consumption of energy, and now supplies, with natural gas, more than two-thirds of today's needs. And everything points to a continuation of this ballooning

demand—and that it will come principally from oil and gas.

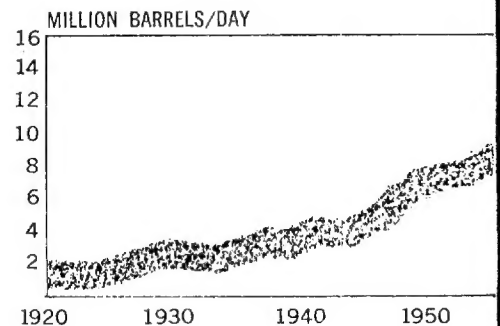
For 20 years our consumption of oil has been rising at almost 6 per cent, compounded annually. What, then, do our calculations show that we will have to have in 1967? In 1977?

In ten years we will be consuming over 14 million barrels of oil a day, compared with 9 million a day now. In twenty years it will be 20 million barrels a day.

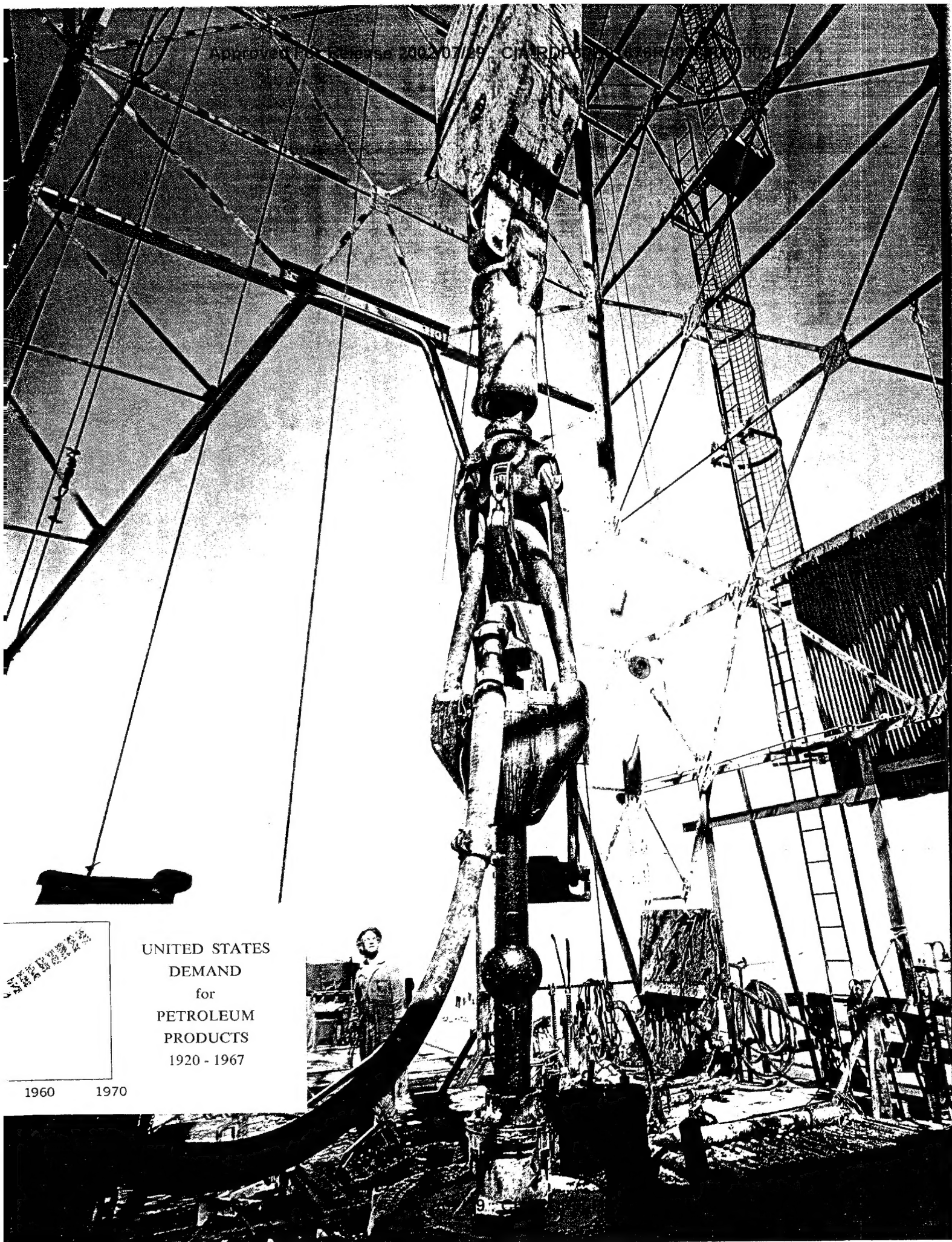
And this isn't just oil we will want. It is oil we will have to have if our industry, technology and standard of living is to progress, or even continue on its present level.

How much can the United States produce from its domestic wells? Present estimates set our production at around 11 million barrels a day by 1967. The other odd three million barrels a day will have to be imported from the rest of the Free World's production. Adding up all the oil it will take to supply that domestic demand in ten years gives us a whopping cumulative total that we must have between now and then—around 40 billion barrels! This is almost as much oil as the United States has brought out of the ground since the oil industry began in 1859.

But most oil men are confident that we can produce that amount. Estimates of how much oil we have underground are based, necessarily, on conjecture. But the curious fact is that, the more we drill, the more we seem to discover. The very act of probing the earth tells us more about how the formations lie, and from this knowledge more discoveries come.



DRILLING in Central Valley, California.



UNITED STATES
DEMAND
for
PETROLEUM
PRODUCTS
1920 - 1967



1960 1970

The U.S. has increased its power from petroleum and natural gas from a third in 1937 to more than two-thirds now. By 1967, the Free World oil industry must invest \$115 billion to keep pace . . .

Then again, the more drilling and production, the more financial returns. This provides more incentive for the independent drillers, who do most of the wildcatting, to keep looking—and finding—more. Thus, as our oil and gas production has increased, our reserves have increased right along with them. Every decade since 1925 has shown a rise in discoveries—17.4 billion barrels from 1925 to '35—20.8 billion from '35 to '45—30.9 billion from '45 to '55!

There are the reserves of our offshore fields, just now being revealed by development. An average offshore well adds nine times the amount of oil to our reserve that an average shore well does.

At present we can depend upon extracting an approximate average of 40 per cent of the oil known to exist in a given field. Oil companies have been and are continuing to spend millions on research that will lead to the method or methods that will increase this yield. Some progress has been made, and there are reasons to expect that more will be made. But this 40 per cent yield is not being increased to an average 50 per cent—or even 45—overnight. Each substantial gain, however, means the recovery of literally billions of barrels of oil not previously available, just from existing wells in the United States.

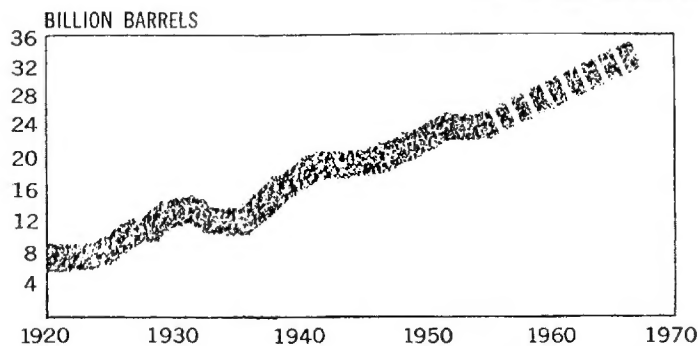
Then there is another great untapped reserve in the United States (and also in nearby Canada)—oil shales and tar sands. These contain immense reserves. Two things prevent our getting at this oil. We need a workable method of taking out the oil at a cost that would permit any kind of competition with oil from drilling; or a sufficiently high cost of drilled oil to make shale and tar sand oil practical from an economic standpoint, if taken out by known means. Either way, it seems likely

that we could be using oil from these sources in at least the next ten years.

How much oil do we have altogether? The Department of the Interior has made an estimate of a total "ultimate" (all we'll ever get) reserve of 300 billion barrels in the U. S. A. Against that, our need in the next ten years of only 40 billion seems pretty modest.

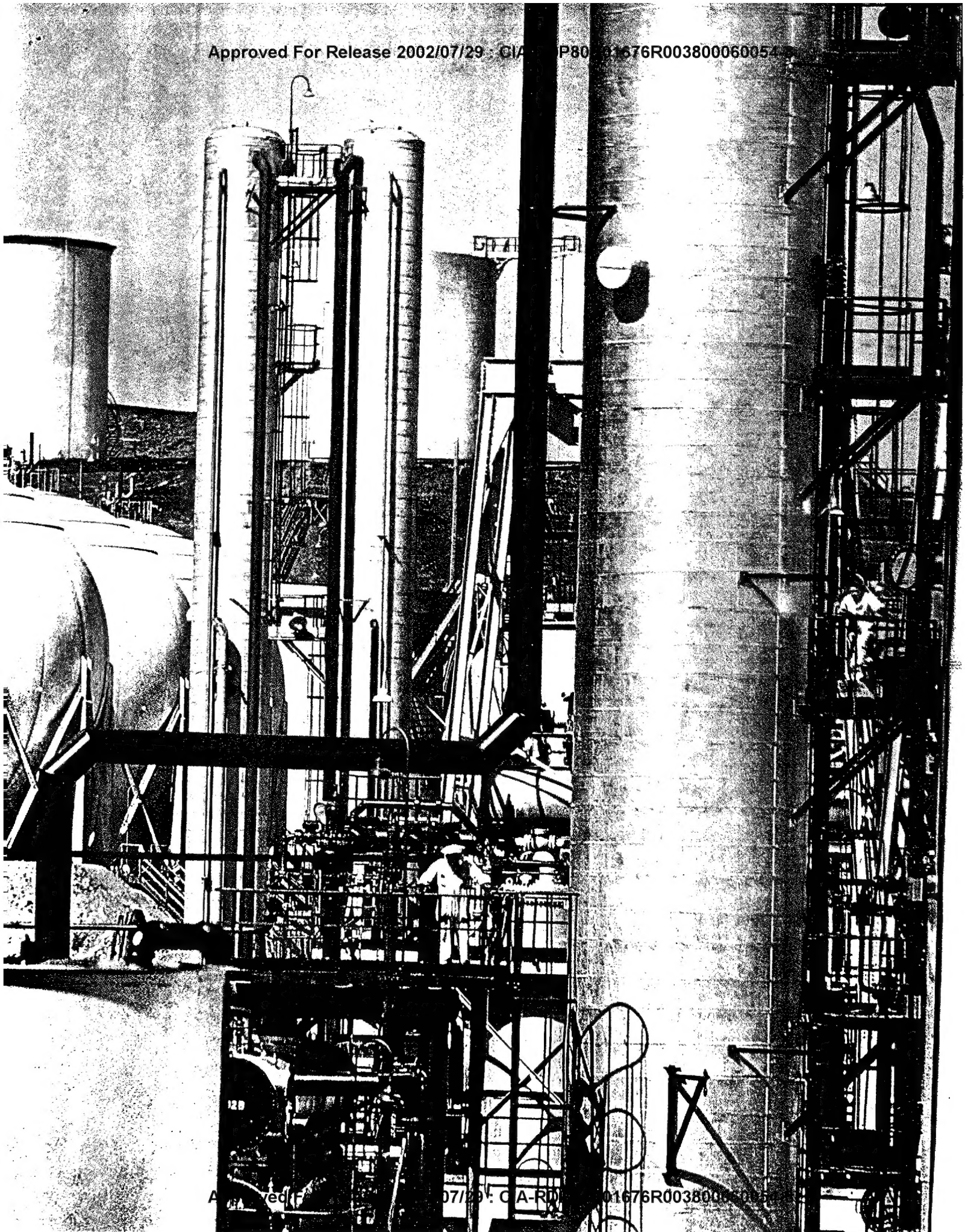
But reserves are one thing—actual oil produced and available is another. The oil of the future is going to be hard to get out—much harder than it has ever been before. And it is going to cost a lot more to get it. Drilling between 3 and 5 thousand feet, each additional foot beyond that depth costs around \$13. But wells at 15,000 feet are not uncommon today, and additional feet beyond that depth cost a whopping average of \$106, and up. A number of the discoveries to be made will have to be deep, down to 20,000 feet and below.

What about that big offshore reserve we mentioned a while ago? Offshore wells are productive, but expensive. Deep offshore wells cost an average of three quarters of a million dollars each—six times the average cost of a well ashore. Between 1946 and now, the cost of producing an average barrel of crude oil from the earth has risen over 100%—and there is reason to



TOWERS of Cracking Plant, Richmond.





In ten years, the United States will fall short, by an estimated 3 million barrels a day, of supplying its needs from domestic sources. The difference must come from abroad. It will not be easy, but the main roadblock is political . . .

suppose that this cost, too, will keep on increasing in the next ten years.

So the problem is as much financial as physical. We know the oil is there that we're going to need. But how much is it going to cost to get it out? There are estimates on that, too—in the first ten years from today, the oil industry of the United States will have to raise seventy-three and a half billion dollars to invest in the business. That isn't dividends—that's capital investment. Dividends have to come on top of that, after taxes. The chances are that the American oil industry, just as it has in the past, will get almost all of this immense capital investment out of operations—the sale of its products, with some of it, of course, coming from borrowing and the sale of stock.

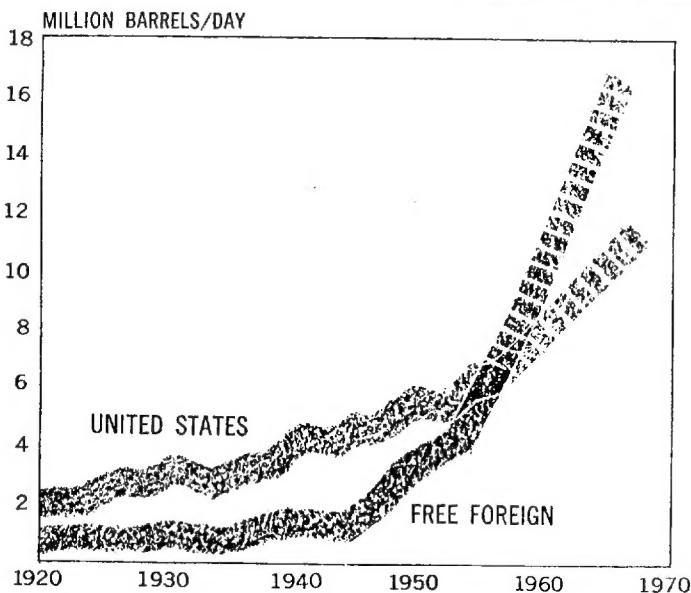
That's the picture from inside the United States—40 billion barrels, 73½ billion dollars invested. But what about the rest of the Free World? We may need up to three million barrels a day from that source within ten years. Will they be able to spare such an amount? Their rate of increase in consumption will in the future be greater than ours and is now rising faster than ours. Over the last ten years, we have increased our consumption at a rate of about 6% compounded annually—the Free World increased theirs by 11% annually. This is reasonable, since they started farther down the scale, and now must catch up. But what will that do to the oil we will need from them?

The Free World (outside the U. S.) will need, in ten years, around 14.2 million barrels a day; their production will be close to 17 million barrels a day. So, if all goes well, they *can* spare the oil we will need.

But there is much more than what we *can* do inherent in these projected figures. It is what we *must* do, or suffer a disastrous check on our advance in

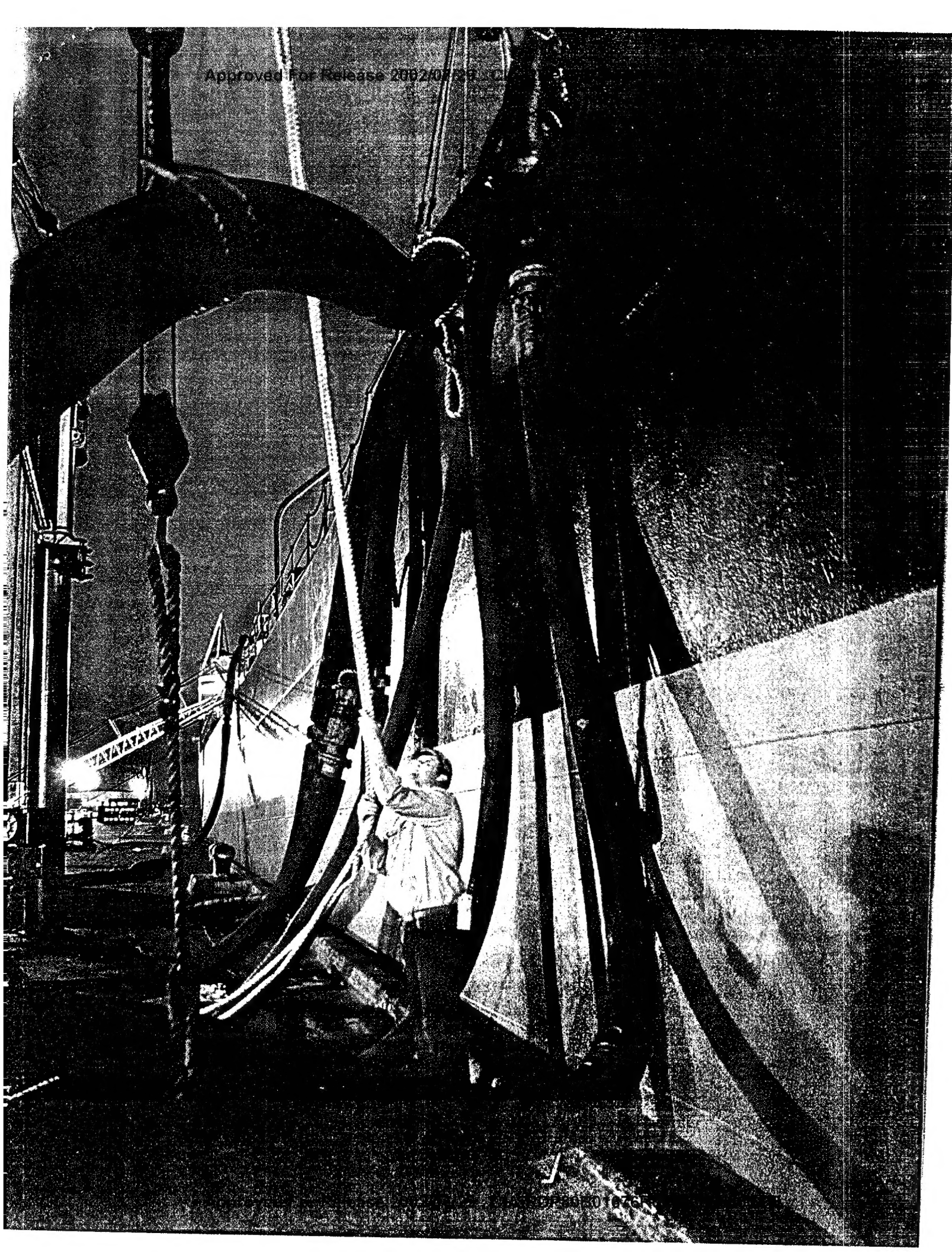
every part of our present way of life.

There is a third problem beyond the physical and financial ones. That problem is a political one. It poses a final question: will the oil industry of the United States and the Free World be *allowed* to meet the oil needs of the future? Excessive taxation, short-sighted and hampering regulations on prices, expansion, financing, imports and operations can slow down our oil technology as surely as a serious depression. Disputes between two arms of government, with the oil industry in the middle (as in the tidelands controversy) can seriously delay the development of the oil we need; harassing lawsuits; protracted investigations with no particular evidence in hand or goal in sight can cost the oil industry fortunes in both time and money to no result. Attacks on the depletion provisions, repeated year after year, can, if successful, dull the edge of incentive and send the wild-catters' money into some more rewarding field.



LOADING Tankers, night, Richmond.

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